

10/007304

COPPER INTERCONNECT STRUCTURE HAVING STUFFED DIFFUSION BARRIER

Abstract of the Disclosure

The present invention provides a method of fabricating a semiconductor device, which could advance the commercialization of semiconductor devices with a copper interconnect. In a process of metal interconnect line fabrication, a TiN thin film combined with an Al intermediate layer is used as a diffusion barrier on trench or via walls. For the formation, Al is deposited on the TiN thin film followed by copper filling the trench. Al diffuses to TiN layer and reacts with oxygen or nitrogen, which will stuff grain boundaries efficiently, thereby blocking the diffusion of copper successfully.

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